

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Kazuhide Fujimoto et al.

Serial No.: 10/586,859 Art Unit: 1796  
Filed : January 22, 2007 Examiner: LOEWE, ROBERT S  
Title : PRESSURE SENSITIVE ADHESIVE COMPOSITION

DECLARATION UNDER RULE 132

Honorable Commissioner of Patents and Trademarks,  
Alexandria, Virginia 22313-1450

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I, Toyohisa Fujimoto, a citizen of Japan and having postal mailing address of c/o Kaneka Corporation, 1-8, Miyamae-cho, Takasago-cho, Takasago-shi, Hyogo 651-2137, Japan, declare and say that:

In March, 1999, I was graduated from Graduate School of Engineering, Tohoku University, and received a master's degree in the field of chemistry;

Since April, 1999, I have been employed by Kaneka Corporation and engaged in the work of research and development of modified silicone for sealing materials in High Performance Polymers Division.

I am familiar with the technical field of the present invention:

I respectfully submit herewith my exact report:

In order to demonstrate the effect of the present invention, I have carried out the following experiments.

Object

The experiments are:

- 1) to demonstrate that the claimed range of the number average molecular weight of the oxyalkylene polymer provides a high adhesive strength (Additional Experiment 1);
- 2) to compare Comparative Examples 1 and 2 with Example 2 of the present application, all of them using the same amount of tackifier resin (Additional Experiments 2-1 and 2-2); and
- 3) to demonstrate that a large amount of tackifier resin sacrifices good characteristics of the oxyalkylene polymers (Additional Experiment 3).

Experiments

[Additional Experiment 1]

The polyether (number average molecular weight (Mn): 8,200; 0.55 equivalent of hydrolysable silyl group; 100 parts by weight) of Reference Example 3 of Hirose et al. (US Patent 4,463,115) and a tackifier resin (YS Polyster S-145) were used to prepare a mixture. A pressure sensitive adhesive composition and a pressure sensitive adhesive film were prepared in the manner described in page 17, lines 19 to 27 of the specification of the present application. The adhesive strength (peel strength) of the film was evaluated in the manner described in page 17, lines 27 to 34 of the specification of the present application.

[Additional Experiment 2-1]

A pressure sensitive adhesive composition was prepared in the same manner as in Comparative Example 1 of the present application except that the amount of tackifier resin was reduced to 50 parts by weight. The adhesive strength of the film was evaluated.

[Additional Experiment 2-2]

A pressure sensitive adhesive composition was prepared in the same manner as in Comparative Example 2 of the present application except that the amount of tackifier resin was reduced to 50 parts by weight and toluene was not used. The adhesive strength of the film was evaluated.

[Additional Experiment 3]

A pressure sensitive adhesive composition was prepared in the same manner as in Additional Experiment 1 except that the amount of tackifier resin was increased to 120 parts by weight. The adhesive strength of the film was evaluated also at 60°C and 5°C.

[Example 2]

Example 2 of the present application was repeated. A pressure sensitive adhesive composition was prepared in the same manner as in Example 2 of the present application. The adhesive strength of the film was evaluated also at 60°C and 5°C.

The results are shown in Table 1. Incidentally, the results of Example 1 and Comparative Examples 1 and 2 of the present application are also shown in Table 1 for comparison.

Results

Comparison between Example 2 and Additional Experiment 1 indicates that the pressure sensitive adhesive composition does not provide a high adhesive strength, even though the hydrolyzable silyl group content of the polymer is within the claimed range (0.3 to 0.7 equivalent), if Mn of the polymer is not within

the claimed range (20,000 to 50,000). In other words, the claimed range of Mn provides a high adhesive strength.

Comparison between Example 2 and Additional Experiment 2-2 indicates that the pressure sensitive adhesive composition provides a low adhesive strength if the hydrolyzable silyl group content of the polymer is not within the claimed range. Additional Experiment 2-1 demonstrates that a very low adhesive strength is obtained if neither Mn nor the hydrolyzable silyl group content is within the claimed range.

Additional Experiment 3 demonstrates that a large amount of tackifier resin increases the adhesive strength, but residual paste (the pressure sensitive adhesive) was observed on the adherend in the peel strength test. In other words, the claimed range of the amount of tackifier resin provides an excellent composition.

Table 1

	Example 1	Example 2	Comparative Example 1	Comparative Example 2	Additional Experiment 1	Additional Experiment 2	Additional Experiment 2-1	Additional Experiment 2-2	Additional Experiment 3
Mn of the polymer	31,000	31,000	10,800	31,000	8,200	10,800	0.75	0.75	31,000
Hydrolyzable silyl group (equivalent)	0.6	0.4	0.75	0.8	0.55	0.55	0.8	0.8	8,200
Tackifier resin (parts by weight)	80	50	80	80	50	50	50	50	0.55
Toluene (parts by weight)	40	0	0	40	0	0	0	0	120
Results in the specification	Ambient temperature (23°C)	Peel strength (N/25mm)	55.2	36.0	9.2	29.8			
	Ambient temperature (23°C)	Peel strength (N/25mm)		28			14.5	3.8	
		Residual paste	No residue				No residue	No residue	
Results in the high temperature (60°C)	Additional Experiments	Peel strength (N/25mm)	8						28
		Residual paste	No residue						Residue
Low temperature (5°C)		Peel strength (N/25mm)	60						At least 100
		Residual paste	No residue						Breakage of the film

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed this 17th day of September, 2009

*Toyohisa Fujimoto*

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